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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,501	10/17/2005	Back-Woon Lee	AB-1532 US	1182
33605 7590 12/23/2008 MACPHERSON KWOK CHEN & HEID LLP 2033 GATEWAY PLACE SUITE 400 SAN JOSE, CA 95110				
EXAMINER				
TRAN, MY CHAU T				
ART UNIT		PAPER NUMBER		
2629				
MAIL DATE		DELIVERY MODE		
12/23/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/553,501

Applicant(s)

LEE, BAEK-WOON

Examiner

MY-CHAU T. TRAN

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 October 2007.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-20 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 17 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/5508)
Paper No(s)/Mail Date See Office Action.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Application and Claims Status

1. Claims 1-20 are currently pending and are under consideration in this Office Action.

Priority

2. This instant application is a 371 of PCT/KR04/00882 filed on 04/16/2004, and as a result this instant application has the effective filing date of 04/16/2004.

3. Receipt is acknowledged of papers, i.e. Republic of Korea Application No. 10-2003-0024375 filed 04/17/2003, submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

4. The information disclosure statements (IDS) filed on 10/17/2005, 08/31/2007, and 10/09/2007 have been reviewed, and the references that have been considered are initialed as recorded in PTO-1449 forms.

Claim Objections

5. Claim 5 is objected to because of the following informalities: The recitation of “*a four pair of switching elements*” in line 5 of claim 5 appear to be a typographical error since claim 5 further recite the recitation of “*a fourth pair of switching elements*” in lines 6-7 of claim 5. That

is the recitation of “*a four pair of switching elements*” should be ‘a **fourth** pair of switching elements’. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- A. For claim 1, the terms ‘*different-sided gate line*’ and ‘*different-sided data line*’ are vague and indefinite. The addition of the words “*different-sided*” to an otherwise definite expression (i.e. data line and gate line) extends the scope of the expression so as to render it indefinite. Thus, claim 1 and all its dependent claims are rejected under 35 U.S.C. 112, second paragraph.
- B. For claim 2, the phrase ‘*a pair of switching elements adjacent above and below*’ is vague and indefinite. It is unclear as to the instant claimed arrangement of the instant claimed ‘*pair of switching elements*’, i.e. what structural feature(s) is being adjacent above and below the instant claimed ‘*pair of switching elements*’? Therefore, claim 2 and all its dependent claims are rejected under 35 U.S.C. 112, second paragraph.
- C. For claim 2, the term ‘*opposite-sided gate lines*’ is vague and indefinite. The addition of the words “*opposite-sided*” to an otherwise definite expression (i.e. gate lines)

extends the scope of the expression so as to render it indefinite. Thus, claim 2 and all its dependent claims are rejected under 35 U.S.C. 112, second paragraph.

D. Both claim 2 and claim 3 recite the limitation "*a pair of switching elements*" in line 1.

There is insufficient antecedent basis for this limitation in the claims. There is no recitation of this limitation in the instant claim 1 for which the instant claim 2 and claim 3 depend. Hence, there is insufficient antecedent basis for this limitation; and claim 2 and claim 3 and all its dependent claims are rejected under 35 U.S.C. 112, second paragraph.

E. For claim 3, the phrase '*a pair of switching elements adjacent above and below*' is vague and indefinite. It is unclear as to the instant claimed arrangement of the instant claimed '*pair of switching elements*', i.e. what structural feature(s) is being adjacent above and below the instant claimed '*pair of switching elements*'? As a result, claim 3 and all its dependent claims are rejected under 35 U.S.C. 112, second paragraph.

F. For claim 3, the term '*opposite-sided gate lines*' is vague and indefinite. The addition of the words "*opposite-sided*" to an otherwise definite expression (i.e. gate lines) extends the scope of the expression so as to render it indefinite. Consequently, claim 3 and all its dependent claims are rejected under 35 U.S.C. 112, second paragraph.

G. For claims 6 and 7, the terms "*arranged regularly*" is vague and indefinite because the meaning of a term cannot depend on the unrestrained, subjective opinion of the person practicing the invention. See *Datamize LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347-48, 75 USPQ2d 1801, 1807 (Fed. Cir. 2005) and also MPEP §

2173.05(b). Accordingly, claims 6 and 7 and all its dependent claims are rejected under 35 U.S.C. 112, second paragraph.

H. For claim 13, the term '*natural number*' is vague and indefinite. The addition of the words "*natural*" to an otherwise definite expression (i.e. number) extends the scope of the expression so as to render it indefinite. Therefore, claim 13 and all its dependent claims are rejected under 35 U.S.C. 112, second paragraph.

I. For claim 15, the terms '*different-sided gate lines*' and '*same-sided gate lines*' are vague and indefinite. The addition of the words "*different-sided*" and "*same-sided*" to an otherwise definite expression (i.e. gate lines) extends the scope of the expression so as to render it indefinite. Thus, claim 15 and all its dependent claims are rejected under 35 U.S.C. 112, second paragraph.

J. For claim 17, the term '*opposite-sided data lines*' is vague and indefinite. The addition of the words "*opposite-sided*" to an otherwise definite expression (i.e. data lines) extends the scope of the expression so as to render it indefinite. Consequently, claim 17 and all its dependent claims are rejected under 35 U.S.C. 112, second paragraph.

K. For claim 19, the term '*same-sided data lines*' are vague and indefinite. The addition of the words "*same-sided*" to an otherwise definite expression (i.e. data lines) extends the scope of the expression so as to render it indefinite. Thus, claim 19 and all its dependent claims are rejected under 35 U.S.C. 112, second paragraph.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-8 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Takahara et al. (US Patent 5,436,635).

For *claims 1-8 and 13*, Takahara et al. disclose a liquid crystal display (LCD) (see e.g. Abstract; col. 1, lines 17-15; col. 6, line 27 thru col. 7, line 40; fig. 3). Takahara et al. disclose several different circuit schematics of the LCD panel (see e.g. col. 6, line 27 thru col. 7, line 40; figs. 1, 2 and 6-12). In general, the LCD panel comprises a substrate with a matrix array of pixel electrodes that is composed of thin film transistor (TFT), an opposite electrode substrate with a common electrode, and between these two substrate are liquid crystals (see e.g. col. 9, lines 11-29; figs. 1, 2 and 6-13). In one embodiment as illustrated by figures 1 and 2, the LCD panel comprises two gate drivers (ref. #13 and 14) with a plurality of gate signal lines (ref. #G_{p1} thru G_{pn} and #G_{m1} thru G_{mn}) (refers to instant claimed a plurality of gate lines), two source drivers (ref. #11 and 12) with a plurality of source signal lines (ref. #S_{p1} thru S_{pn} and #S_{m1} thru S_{mn}) (refers to instant claimed a plurality of data lines), and an matrix of pixel wherein each pixel comprises two TFTs (refers to instant claimed a plurality of switching elements) (see e.g. col. 13, line 20 thru col. 14, line 39). As depicted by figures 1 and 2, each TFT are connected to different gate signal line and different source signal line such that each pixel is provided with two TFTs, two gate signal line, and source signal lines (refers to instant claimed limitation of 'at least one

of the switching elements in a row or in a column is connected to a different-sided gate line or to a different-sided data line'; and instant claims 2-8) (see e.g. col. 13, line 66 thru col. 14, line 33).

Takahara et al. disclose that the drive operation of the LCD panel is a column inversion method (refers to instant claim 13) (see e.g. col. 15, lines 33-68).

Therefore, the device of Takahara et al. does anticipate the instant claimed invention.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahara et al. (US Patent 5,436,635) in view of Sawabe (US Patent 7,113,159 B2; *Filing Date of 01/02/2003*).

For *claims 1-8 and 13*, Takahara et al. disclose a liquid crystal display (LCD) (see e.g. Abstract; col. 1, lines 17-15; col. 6, line 27 thru col. 7, line 40; fig. 3). Takahara et al. disclose several different circuit schematics of the LCD panel (see e.g. col. 6, line 27 thru col. 7, line 40; figs. 1, 2 and 6-12). In general, the LCD panel comprises a substrate with a matrix array of pixel electrodes that is composed of thin film transistor (TFT), an opposite electrode substrate with a common electrode, and between these two substrate are liquid crystals (see e.g. col. 9, lines 11-29; figs. 1, 2 and 6-13). In one embodiment as illustrated by figures 1 and 2, the LCD panel comprises two gate drivers (ref. #13 and 14) with a plurality of gate signal lines (ref. #G_{pl} thru

G_{pn} and $\#G_{m1}$ thru G_{mn}) (refers to instant claimed a plurality of gate lines) arranged vertically, two source drivers (ref. #11 and 12) with a plurality of source signal lines (ref. $\#S_{p1}$ thru S_{pn} and $\#S_{m1}$ thru S_{mn}) (refers to instant claimed a plurality of data lines) arranged horizontally, and an matrix of pixel wherein each pixel comprises two TFTs (refers to instant claimed a plurality of switching elements) (see e.g. col. 13, line 20 thru col. 14, line 39). As depicted by figures 1 and 2, each TFT are connected to different gate signal line and different source signal line at an intersection point such that each pixel is provided with two TFTs, two gate signal line, and source signal lines (refers to instant claimed limitation of *'at least one of the switching elements in a row or in a column is connected to a different-sided gate line or to a different-sided data line'*; and instant claims 2-8) (see e.g. col. 13, line 66 thru col. 14, line 33). Takahara et al. disclose that the drive operation of the LCD panel is a column inversion method (refers to instant claim 13) (see e.g. col. 15, lines 33-68).

The teachings of Takahara et al. differ from the presently claimed invention as follows:

For **claims 9-20**, Takahara et al. fail to disclose a liquid crystal panel wherein each pixel comprises subpixels representing three primary colors and a whit color.

However, Sawabe teaches the limitations that are deficient in Takahara et al. as follows:

For **claims 9-20**, Sawabe disclosed a liquid crystal display (LCD) device (see e.g. Abstract; col. 1, lines 5-6; col. 4, lines 24-31; figs. 1, 14, and 18). In general as shown by figures 1 and 2, the LCD device comprises a source drive circuit (ref. #5) with a plurality of source bus lines (ref. $\#S1$ thru $s12$) arranged vertically, a gate drive circuit (ref. #5) with a plurality of gate bus lines (ref. $\#S1$ thru $s12$) arranged horizontally, and at each intersection point between the source signal line and gate signal line there is a pixel electrode and a transistor (see e.g. col. 7,

line 29 thru col. 8, line 33). As illustrated by figures 2 and 3, each pixel is composed of three sub-pixels wherein each sub-pixel represents a primary color, i.e. red, green, and blue (see e.g. col. 8, lines 20-33). In another embodiment as depicted by figures 12 and 13, each pixel is composed of four sub-pixels wherein each sub-pixel represents a primary color, i.e. red, green, and blue, and a white color (see e.g. col. 13, lines 37-64). Sawabe also disclose that the drive method for driving the LCD device is a method for inverting the polarity of applied voltage that includes a frame inversion drive system, a line inversion drive system, and a dot inversion drive system (see e.g., col. 28, lines 12-45).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to disclose a liquid crystal panel wherein each pixel comprises subpixels representing three primary colors and a white color as taught by Sawabe in the device of Takahara et al. One of ordinary skill in the art would have been motivated to disclose a liquid crystal panel wherein each pixel comprises subpixels representing three primary colors and a whit color in the device of Takahara et al. for the advantage of providing a LCD device that obtains a high contrast and an excellent gradation curve with a wide viewing angle so that a display quality level of a display screen can be improved (Sawabe: col. 4, lines 15-23). Additionally, both Takahara et al. and Sawabe disclose LCD device with pixel electrode comprising thin film transistor (Takahara: fig. 1; Sawabe: fig. 2). Furthermore, one of ordinary skill in the art would have a reasonable expectation of success in the combination of Takahara et al. and Sawabe because in both the LCD device of Takahara et al. and Sawabe the drive method for driving the LCD device is a method for inverting the polarity of applied voltage, and as a

result, the additional structural features, i.e. subpixels representing three primary colors and a white color as taught by Sawabe, does not change the mode of operation of the LCD device.

Therefore, the combine teachings of Takahara et al. and Sawabe do render the device of the instant claims *prima facie* obvious.

Double Patenting

12. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

13. Claim 1 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 11/224,038 (specifically the claim amendment filed 11/18/2008). Although the conflicting claims are not identical, they are not patentably distinct from each other because both the apparatus of the

instant claim 1 and the apparatus of claim 1 of copending Application No. 11/224,038 have similar structural features.

10/553,501	11/224,038
<p>1. A liquid crystal display comprising: a plurality of switching elements arranged in a matrix; a plurality of gate lines connected to the switching elements and transmitting gate signals for turning on or off the switching elements, and a plurality of data lines connected to the switching elements and transmitting data voltages, wherein at least one of the switching elements in a row or in a column is connected to a different-sided gate line or to a different-sided data line.</p>	<p>1. A liquid crystal display (LCD), comprising: a plurality of pixel rows including a plurality of pixels in a matrix-like arrangement, each pixel row having a first switching element, a second switching element, and a pixel electrode coupled with the first switching element and the second switching element; a gate line coupled with the first switching element to transmit a gate-on voltage thereto; and a data line coupled with the first switching element and the second switching element to transmit a data voltage thereto, wherein the first switching element and the second switching element at each of the respective pixels are coupled with different data lines, and the second switching element is in a turned-off state.</p>

Consequently, the examined claims would be obvious over the claims of copending Application No. 11/224,038 (specifically the claim amendment filed 11/18/2008).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

14. No claims allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MY-CHAU T. TRAN whose telephone number is (571)272-0810. The examiner can normally be reached on Monday: 8:00-2:30; Tuesday-Thursday: 7:30-5:00; Friday: 8:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard A. Hjerpe can be reached on 571-272-7691. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

